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(54) Title: A METHOD FOR PREPARING STYRENE AND MALEIMIDE COPOLYMER USING SUPER CRITICAL FLUID

(57) Abstract: Disclosed is a method for preparing copolymers of styrene and maleimide by imidization-extrusion of copolymers of styrene and maleic anhydride using a supercritical fluid. The method can be performed at a lower temperature compared to a conventional method and can remove residual amines and by-products with ease, and thus can provide copolymers of styrene and maleimide having excellent optical properties, thermal properties and mechanical properties.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2004/001090

A. CLASSIFICATION OF SUBJECT MATTER

IPC7 C08F 283/04, C08F 212/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7 C08F 283/04, C08F 212/08

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Patents and applications for invention since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
CA-on CD, PAJ, KIPASS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 06-248017 A (MONSANT KASEI KK) 06 September 1994 see the whole documents	2,5,8,13
Y	US 5,444,041 A (ARCO CHEM TECH) 15 August 1995 see the whole documents	2,5,8,13
Y	JP 2002-146038 A (MITSUBISHI CHEMICALS CORP) 22 May 2002 see the whole documents	2,5,8,13
A	JP 06-87932 A (NIPPON SHOKUBAI CO LTD) 29 March 1994 see the whole documents	1-13
A	EP 0735051 A1 (XEROX CORP) 02 October 1996 see the whole documents	1-13
A	US 2002/0052456 A1 (Sabine Beuermann, Michael Buback et al.) 02 May 2002 see the whole documents	1-13

Further documents are listed in the continuation of Box C.

See patent family annex.

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- "&" document member of the same patent family

Date of the actual completion of the international search

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 06-87932 A	29.03.1994	None	
JP 2002-146038 A	22.05.2002	None	
US 5442041 A	15.08.1995	AT177760T CA2166638A1 DE69601739D1 DE69601739T2 EP0722954A2 ES2128820T3 US5442041A	15.04.1999 20.07.1996 22.04.1999 15.07.1999 24.07.1996 16.05.1999 15.08.1995
JP 06-248017 A	06.09.1994	None	
EP0735051 A1	02.10.1996	EP0735051A1 JP8269107A	02.10.1996 15.10.1996
US 2002/0052456 A1	02.05.2002	JP2002201205 A2 EP1201682 A9 DE10054114 A1	19.07.2002 31.07.2002 16.05.2002